

CLAIMS

1. A device for lifting a porous sheet from a stack of such sheets, the device comprising
a gas stream supply mechanism that is configured to generate a gas stream and is
5 positioned so that, in use, the gas stream impinges on a first sheet of the stack, the gas stream supply mechanism being configured so that the gas stream penetrates the first sheet to generate a cushion of gas between the first sheet and a second sheet, thereby lifting the first sheet from the second sheet; and
a capturing mechanism for capturing the first sheet.
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2. A device as claimed in claim 1, in which the capturing mechanism is displaceable between a pick-up position in which the first sheet is captured and a feed position in which the first sheet can be engaged by a feed mechanism, the device including a displacement mechanism for displacing the capturing mechanism between the pick-up and feed positions.
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3. A device as claimed in claim 2, in which the gas stream supply mechanism includes an air displacement device having an outlet conduit and at least one outlet nozzle connected to the outlet conduit, the, or each, outlet nozzle being displaceable between a pick-up position proximate the first sheet of the stack and a feed position, the air
20 displacement device being configured to generate a flow of air from the, or each, outlet nozzle sufficient to penetrate the first sheet such that a cushion of air is generated between the first sheet and a second sheet to lift the first sheet from the second sheet.
4. A device as claimed in claim 3, in which the capturing mechanism includes an air
25 extraction device having an inlet conduit, at least one inlet nozzle connected to the inlet conduit, the, or each, inlet nozzle defining a pick-up surface and being displaceable between the pick-up position proximate the first sheet of the stack and a feed position, the air extraction device being configured to generate a flow of air into the, or each, inlet nozzle such that the first sheet is drawn against the pick-up surface.
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5. A device as claimed in claim 4, which includes a plurality of outlet nozzles that are positioned to span the first sheet, a plurality of inlet nozzles, also positioned to span the first

sheet, an outlet manifold that interconnects the outlet conduit of the air displacement device and the outlet nozzles and an inlet manifold that interconnects the inlet conduit of the air extraction device and the inlet nozzles.

5 6. A device as claimed in claim 5, in which the inlet and outlet nozzles are generally aligned and are in alternating positions with respect to each other.

7. A device as claimed in claim 5, in which the air displacement mechanism is an air pump and the air extraction device is an evacuation pump, both pumps being connected to a
10 shaft of a drive motor so that, when operated, the air pump serves to supply air to the outlet conduit and to draw air into the inlet conduit substantially simultaneously.

8. A device as claimed in claim 5, in which a flexible hose interconnects each nozzle with its respective manifold, thereby facilitating displacement of the nozzles with respect to
15 their respective manifolds.

9. A device as claimed in claim 5, in which the displacement mechanism is a reciprocal drive mechanism for driving the inlet and outlet nozzles reciprocally between the pick-up position and the feed position.
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10. A device as claimed in claim 9, in which the nozzles are connected to an elongate carrier, which, in turn, is connected to the reciprocal drive mechanism so that the elongate carrier and thus the nozzles can be displaced reciprocally between the pick-up and feed positions.
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11. A device as claimed in claim 10, in which the elongate carrier is a bar and the drive mechanism includes a stepper motor connected to an axle that extends substantially parallel to the bar, a swing arm being interposed between each end of the axle and a corresponding end of the bar so that reciprocal movement generated by the stepper motor can be
30 transmitted to the bar and thus the nozzles.

12. A device as claimed in claim 5, in which each nozzle has a sheet-engaging member that, in respect of the inlet nozzles, defines the pick-up surfaces and, in respect of the outlet

nozzles is such that as air is expelled from the outlet nozzles, a region of low pressure is generated intermediate the outlet nozzle and the first sheet, thereby facilitating lifting of the first sheet.